9500309

THE UNITED STATES OF ANTERIOA

TO ALL TO WHOM THESE PRESENTS SHALL COME;

Hębri Jech US, n Monsanto Company

There has been presented to the

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW in such cases made and provided have been complied with, and the title thereto is, from the records of the Plant Variety Protection Office, in the applicant(s) indicated in the said copy, and WHEREAS, upon due examination made, the said applicant(s) is (are) adjudged to be entitled to a certificate of plant variety protection under the LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (I) SHALL D BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF TAKEN OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT, COMMON

'Hickok'

In Testimony Marcot, I have hereunto set my hand and caused the seal of the Mont Marixty Protection Office to be affixed at the City of Washington, D.C. this thirty-first day of July in the year of our Lord one thousand nine hundred and ninety-eight.

Allest:

Thomas a Salt

Acting Commissioner Plant Variety Protection Office Agricultural Marketing Service

Secretary of Agriculture

EXHIBIT A.

ORIGIN AND BREEDING HISTORY OF HICKOK

Hickok was an F3 derived single plant selection from the cross TX81V6610(TAM 200 sibling)/W82-163(Odeskaja 51/Newton). The cross was made in 1985 and the plant selection was made at Berthoud, Colorado in 1988. The resulting F4 plant row was tested in preliminary yield trials in 1989 and 1990. Hickok was head-rowed in 1990 and four F6 progeny rows were selected for foliar disease resistance, height and uniformity. This line was designated WI89-273-13 and has been subsequently tested in replicated trials from 1991 thru 1993. These trials represent a fairly broad geographic area in the Hard Winter Wheat region. Hickok is entered in selected official 1994 university trials and the 1994 Southern Regional Performance Nursery.

In 1990, 48 head-rows were grown in Berthoud, Colorado. Twelve of these rows were individually harvested and grown as progeny rows in 1991. Four of these progeny rows were selected due to superior foliar disease resistance. These progeny rows were bulked to plant an initial seed increase in 1992 which produced 500 pounds of breeder seed. In 1993, 14,930 pounds of foundation seed was produced in Berthoud, Colorado.

Hickok has been uniform and stable since 1992. Less than 0.5% of the plants were rogued from the breeder seed field in 1993. Approximately 90% of the variant plants were taller awned wheat plants. Up to 1% total variant plants may be encountered in subsequent generations.

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EXHIBIT B.

NOVELTY STATEMENT

Hickok is most similar to the hard red winter wheat Ponderosa. However, it can be easily distinguished by the following morphological characteristics:

- Hickok has a short acuminate beak on the glume. Ponderosa has a long acuminate beak, (see supporting statistical data from Berthoud, Colorado 1992 & 1993 on the following pages).
- Hickok has midlong hairs on the brush (average 0.5mm). Ponderosa has long brush hairs (1mm+).

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Agripro Seeds Inc. Statistical Summary

11/20/95

t-Test: Two-Sample Assuming	g Equal Variances	(1)
Beak Length (mm)	For year:	1992
:	Hickok	Ponderosa
Mean	2.564	10.332
∠ Variance	0.1874	4.584766667
Observations	25	25
Pooled Variance	2.386083333	
Hypothesized Mean Difference	0	
df	48	
t Stat	-17.77957682	
P(T<=t) one-tail	4.65078E-23	
t Critical one-tail	1.677224191	
P(T<=t) two-tail	9.30157E-23	
t Critical two-tail	2.01063358	

t-Test: Two-Sample Assuming Unequal Variances (2)					
Beak Length (mm)	For year:	1992			
·	Hickok	Ponderosa			
Mean	2.564	10.332			
Variance Observations	0.1874 25	4.584766667 25			
Hypothesized Mean Difference df	0 26				
t Stat P(T<=t) one-tail t Critical one-tail P(T<=t) two-tail t Critical two-tail	-17.77957682 2.26771E-16 1.705616341 4.53543E-16 2.055530786				

⁽¹⁾ Steel, R.G.D., and J.H. Torrie. 1960. Comparisons Involving Two Sample Means. p. 86-121. In Principles and Proceedures of statistics. McGraw-Hill Book Co. Inc., New York.

⁽²⁾ Steel, R.G.D., and J.H. Torrie. 1960. Independent Samples and Unequal Variances. p. 106. In Principles and Proceedures of statistics. McGraw-Hill Book Co. Inc., New York.

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Agripro Seeds Inc. Statistical Summary

11/20/95

Raw	Data	Summary	

Beak Length (mm)

1992

	•		
number of		Raw data:	
observations:	Hickok		Ponderosa
1	2.0	•	7.4
2	2.0		7.5
3	2.0	•	7.7
4	2.1	- ,	8.6
5	2.2		8.7
6	2.2		8.7
7	2.2		9.0
8	2.2		9.2
9	2.2		9.3
10	2.3		9.3
11	2.5		9.5
12	2.5		9.5
13	2.5		9.5
14	2.7		9.6
15	2.7		10.0
16	19 17 madaya 14 (Ba - 2.7		10.6
17	2.7		10.9
18	2.7		11.3
19	2.8		11.5
20	2.8		11.7
21	2.8		12.5
22	3.3		13.0
23	3.3		13.2
24	3.3		14.3
25	3.4	•	15.8
			*

Agripro Seeds Inc. Statistical Summary

11/20/95

t-Test: Two-Sample Assuming	g Equal Variances	(1)
Beak Length (mm)	For year	1993
	Hickok	Ponderosa
Mean	2.484	6.836
Variance	0.083066667	2.430733333
, Observations	25	25
Pooled Variance	1.2569	
Hypothesized Mean Difference	0	
df	48	
t Stat	-13.72440515	
P(T<=t) one-tail	1.54589E-18	
t Critical one-tail	1.677224191	
P(T<=t) two-tail	3.09178E-18	
t Critical two-tail	2.01063358	

t-Test: Two-Sample Assuming Unequal Variances (2)				
Beak Length (mm)	For yea	ar: 1993		
	Hickok	Ponderosa		
Mean	2.484	6.836		
Variance	0.083066667	2.430733333		
Observations	25	25		
Hypothesized Mean Difference	0			
df	26			
t Stat	-13.72440515			
P(T<=t) one-tail	1.01161E-13			
t Critical one-tail	1.705616341			
P(T<=t) two-tail	2.02322E-13			
t Critical two-tail	2.055530786			

- (1) Steel, R.G.D., and J.H. Torrie. 1960. Comparisons Involving Two Sample Means. p. 86-121. In Principles and Proceedures of statistics. McGraw-Hill Book Co. Inc., New York.
- (2) Steel, R.G.D., and J.H. Torrie. 1960. Independent Samples and Unequal Variances. p. 106. In Principles and Proceedures of statistics. McGraw-Hill Book Co. Inc., New York.

Agripro Seeds Inc. Statistical Summary

11/20/95

Raw I	Data Summary	Beak Length (mm	1)	1993
	the state of the s			· ·

	•	· '
number of		Raw data:
observations:	Hickok	Ponderosa
1	1.9	4.9
2	2.0	5.0
3	2.0	5.5
4	2.1	5.5
5	2.2	5.5
6	2.2	5.6
7	2.3	5.7
8	2.4	6.0
9	2.4	6.0
10	2.5	6.0
11	2.5	6.0
12	2.5	6.0
13	2.5	6.5
14	2.5	6.5
. 59 .15	2.5	Nasakagasiya wa sa na na malinasi 6.6
16	2.7	6.8
17	2.7	7.4
18	2.7	7.5
19	2.7	7.8
20	2.7	8.0
21	2.7	8.0
22	2.8	8.0
23	2.8	8.7
24	2.9	10.4
25	2.9	11.0
•	•	

EXHIBIT C

U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE LIVESTOCK, MEAT, GRAIN & SEED DIVISION BELTSVILLE, MARYLAND 20705

OBJECTIVE DESCRIPTION OF VARIETY

MAST AGE TROMS: See Reverse:	T (TRITIÇUM SPP.)		
NAME OF APPLICANTS			FICIAL USE ONLY
AgriPro Biosciences Inc. AGDRESS (Street and No. or R.F.D. No., City, State, and ZIP Cod	21.	PVPO NUMBER	9500309
6700 Antioch		VARIETY NAME O	
Shawnee Mission, Kansas 66204		DESIGNATION	
Shawnee 111331011; Ransas 00204		HICK	OK
Place the appropriate number that describes the varietal ch Place a zero in first box (5-8-0 8191 or 0 9)) when n			1 .
I. KINO:			
1. 1 = COMMON 2 = OURUM 3 = EMMER 4 = SPEL	т 5 = роціян 6 = роц	LARD 7 = CLUB	
2. TYPE: 2 1 = SPRING 2 = WINTER 3 = OTHER (Specify)	2 1 = SOFT 2 = HARD	3 = OTHER (Specify	,
2 I = WHITE 2 = RED 3 = OTHER (Specity)			
3. SEASON - NUMBER OF DAYS FROM			
2 2 9 FIRST FLOWERING Jan. 1st	2 3 5 LAS	T FLOWERING	
4. MATURITY (50% Flowering): *Equal to Ponde	erosa		
0 1 NO. OF DAYS EARLIER THAN	7. 1 = ARTHUR	2 = SCOUT	3 = CHRIS
NO. OF DAYS LATER THAN	4 = LEMHI	5 = NUGAINES	6=LEEDS 7=Victory
S. PLANT HEIGHT (From soil level to top of head):			
0 7 9 cm. HIGH			
CM. TALLER THAN			· · · · · · · · · · · · · · · · · · ·
		2 = SCOUT	3 = CHRIS
0 1 CM. SHORTER THAN	7 4=LEMH1	5 = NUGAINES	6=LEEDS 7=Ponderosa
6. PLANT COLOR AT BOOTING (See reverse):	7. ANTHER COLOR	:	
2 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN	N 1 = YELLOW	2 = PURPLE	
8. STEM:			
1 Anthocyanin: 1 = ABSENT 2 = PRESENT	2 Vary bloom:	1 = ABSENT 2	= PRESENT
Plairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT	1 Internodes: 1		ious
0 5 NO. OF NODES (Originating from nade above ground)		ERNODE LENGTH E AF BELOW	ETWEEN FLAG LEAF
9. AURICLES:			
2 Anthocyanin: 1 = ABSENT 2 = PRESENT	1 Hairiness: 1	= ABSENT 2 =	PRESENT
10. LEAF:		•	
Fing leaf at = ERECT 2 = RECURVED booting stage: 3 = OTHER (Specify):	2 Flag leaf: 1	E NOT TWISTED	2 = T WSTED
1 Hairs of first leaf sheath: 1 = ASSENT 2 = PRESEN	T 2 Very bloom o	f flag leaf sheath: 1	= ABSENT 2 = PRESENT
1 2 MM. LEAF WIDTH (First leaf below flat leaf)	2 0 CM. LE	AF LENGTH (First	lead below flag (ead):

5	CPM CR-470-5 (REVERSE	1		
1	1. HEAG:			
	3 Denzity: 1=LAX	2 = gense 3=middense	Shape: I = TAPERI 1 4 = OTHER	_
	4 Awnedness: I = Awn	iless 2 = apically awhleted 3	= AWNLETED ' 4 = AWNEI	•
	Color at macurity: 5	= WHITE 2 = YELLOW 3 = PINK 4 = = Brown 6 = Black 7 = other	: RED R (Specify):	· · · · · · · · · · · · · · · · · · ·
	7. 9 CM. LENGTH		9. 6	
1	Z. GLUMES AT MATURIT	Υ:		
	Length: I = SHORT (2 Futth: 1 = MARROW 3 = WICE (C.	
	3	NG 2 = OBLIQUE 3 = ROUNDED E 5 = ELEVATED 6 = APICULATE	3 Beak: 1=087USE	2 = ACUTE 3 = ACUMINATE
1:	L COLECPTILE COLOR:		IA. SEEDLING ANTHOCY.	lwiw.
	7 1 ,			•
L	1 1 = WHITE 2 = RE	S 3 = PURPLE	2 I = ABSENT 2	= PRESENT
1.5	. JUYENILE PLANT GRO	TIBAH HTW	<u> </u>	
	2 I = PROSTRATE	2 = SEMI-ERECT 3 = EREC	•	
10	L SEED:	•		. , , , , , , , , , , , , , , , , , , ,
	Shape: = CVATE	2 = OVAL 3 = ELLIPTICAL	1 Cheek: 1 = ROUNGE	ED 2 = AHGULAR
	2 Brush: I = SHORT	2 = MEDIUM 3 = LONG	I Bross: 1 = HOT CO	PLLARED 2 = COLLARED
_	Phenol reaction	T = IVORY = 2 = FAWN 3 = LT. BROWN	· · · · · · · · · · · · · · · · · · ·	·
Ŀ	(See instructions):	4 = BROWN S = BLACK		
_		·		
	Calor: I = WHITE	2 = AMBER 3 = RED 4 = PURPLE	5 = QTHER (Specify)	
	6 MM. LENGTH	3. 0 мм. жютн	3 3 GM. PER 1000	SEEDS
17	. SEED CREASE:			·
	Vidth:] = 60% OR L	ESS OF KERNEL 'WINOKA'	<u> </u>	LESS OF XERNEL 'SCOUT'
. '	2 = 80 % OR LE	SS OF KERNEL 'CHRIS'		LESS OF KERNEL 'CHRIS'
-		S WICE AS KERNEL 'LEMHI'		LESS OF XERNEL 'LEMMI'
. 18.	. DISEASE: (0 = Not Test	ed, 1 = Susceptible, 2 = Resistanti 3=MO	derately Susceptib	le 4=Moderately Resistant
3	STEM RUST (Races)	4 (Races)	STRIPE RUST	n LOOSE SMUT
	 		Sp.	indle Streak Mosaic
4	POWDERY MILDEW	דאטפ 0	2 OTHER (Specify) SO	ilborne Mosaic Virus
19	. INSECT: (0 = Nor Teste	d. 1 = Susceptible, 2 = Resistant) 3=MO	derately Susceptib	le 4=Moderately Resistant
	SAWFLY	0 APHIO (Sydv.)	O GREEN BUG	O CEREAL LEAF BEETLE
	GTHER (Specify)	HESSIAN FLY	1 GP 0 A	① a ① c
•	2. <u>∳</u> 10. 10. 10. 10. 10. 10. 10. 10. 10. 10.	RACES: (0 0 5	0 F
20.	INDICATE WHICH YARIS	TY MOST CLOSELY RESEMBLES THAT S	UAMITTED:	
	CHARACTER	NAME OF VARIETY	RETDARAKO	YTSIRAV TC SMAN
	Plant tillering	Ponderosa	Šeod lize	Ponderosa
	Leaf size	Ponderosa	Seec shape	1 Ponderosa
	Leef color	l Ponderosa	Colessiie elangation	l Ponderosa
_	Lesi carriage	Ponderosa	Seedung dicmentation	l Ponderosa
_			····	

INSTRUCTIONS

GENERAL: The following publications may be used as a reference and for the standardization of terms and procedures for completing this form:

- (a) L.T. Briggie and L. P. Reitz. 1963. Classification of Tritique Species and Theat Varieties Grown in the Univer States. Technical Builletin 1273. United States Department of Agriculture.
- (b) V.E. Talls, 1965, A Standardized Phenol Method for Testing Them Sees for Varietal Purity, contribution No. 23 to the handbook of seed resting prepared by the Association of Ollicial Seed Analysis, the attachment,

EXHIBIT D.

ADDITIONAL BOTANICAL DESCRIPTION OF HICKOK

Hickok is a hard red winter wheat bred and developed by AgriPro Biosciences Inc. Hickok is a high yielding, medium short semidwarf with midseason maturity. Hickok is resistant to soilborne and spindle streak mosaic viruses and moderately resistant to leaf rust. Hickok is moderately susceptible to stem rust. Milling and baking characteristics are good.

Juvenile growth habit is semi-erect. Plant color at boot stage is green with an erect, twisted flag leaf. Head shape is tapering, awned and white at maturity. Glumes are glabrous, short and midwide with acuminate beaks. Seed shape is ovate with rounded cheeks.

Hickok is well adapted to the central Great Plains, including the southern portion of Nebraska, northern Texas and Oklahoma, eastern Colorado and Kansas.

EXHIBIT E.

STATEMENT OF THE BASIS OF APPLICANT'S OWNERSHIP

The variety for which Plant Variety Protection is hereby sought was developed by Dr. John Moffatt, an employee of Agripro Seeds, Inc. By agreement between employees and Agripro Seeds, Inc., all rights to any invention, discovery, or developement made by the employee while employed by Agripo Seeds, Inc., were assigned to Agripro Seeds, Inc., with no rights of any kind pertaining to 'Hickok' being retained by the employees.

ACRIPRO WHEAT HARD RED WINTER WHEAT WIB9-273-13

1993
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	OM.				ij Franklijes		1
	OVER	 æ	स्र	353	# #	44%	97
	B	~	2	رم مر الم	2.0	222	2.0
	CRUMB	=	2	3 23	2.3	664	2.7
	1 8	ا مح	2	01 KJ	2.3	426	3.0
III		R	м	53	2.7	សសស	5.0
BAKTING QUALITIY	LOAF	ဗ	820	820 960	867	710 700 810	740
AKTING		æ	ε.	~ ~	4.3	4 3 1	2.7
E	MXX	liju	4.00	4.00 4.25	4.08	3.23 3.25 3.25	3.17
		~	. 20	2 2	4.0	25.5	5.7
· .	ABS	%	62.0	63.0 66.0	63.7. 4.0	62.0 62.0 62.0	62.0
		æ		H 7	1.7	യലം	3.7
	TOL	HE	273-1 1365	1647	1478	1201 1209 1213	1208
	MTXOCRAN PK PT	N.U.	VIB9-273-13 5.0 1365	.0.0	5.00	EAUK 5.0 5.0 5.0	2.00
	深山	min	4.25	4.25 5.35	4.17	3.8 3.25 3.25	3.17
ALITY	ASH		.482	£. 57.	.515	.492 .496 .451	.480
AT QU		æ	2 -	- C	2.7	523	3.3
FLOUR/WHEAT QUALITY	FIR	%	73.6	68.4	72.3	72.3 73.5 68.0	71.3
FIL	NHRD	;	99	8 98	<i>L</i> 9	£8 55	88
	•	æ	יני) ו	U 4	4.7	257	5.7
	FIR	14%nb	10.6	12.9	11.5	10.7 10.7 11.1	10.8
	WHI	14%nb	12.4	13.8	12.8	11.5 11.5 12.5	11.8
	YEAR-LOC		93-II	92-SK	AVERACE	93-II 93-II 92-X	AVERACE